Executive Politics and Technocracy During Crises in Presidential Democracies

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Introduction

Introduction

My research question is: **In what type of crises do technocrats increase their presence/stability in Latin American presidential cabinets?**

Answering this question allows me to offer updated empirical evidence, an approachable conceptualisation of technocracy linked to presidential strategies during crises, gaining insight into the role of technocrats and experts in Latin American executive politics.

- Archival review of press reports in 12 LA countries (mid-1970s-2021), compiling a dataset on ministerial turnover and, for now, "noisy indicators" of crises.
- Data mining (OCR) and machine learning and then survival approach and PS matching (in progress).

Theoretical Foundations

Theoretical Foundations

In Latin America, cabinets and ministers' profiles have been studied in the context of a line of research associated with ministerial turnover and the recruitment of cabinet members (Camerlo and Martínez-Gallardo, 2018).

A recurrent topic has been the **appointment of technocrats** to cabinets (Centeno and Silva, 1998; Silva, 2009). Although technocrats have the expertise and academic qualifications to promote government agendas and macroeconomic policies, their presence in the political sphere could also imply the elimination of a wide variety of policymaking domains from the democratic arena and a **potential dispute with traditional politicians** (Dargent, 2015; Radaelli, 1999).

Theoretical Foundations

The potential dynamics to study here are pretty interesting since they range from **agency problems and moral hazard** (González-Bustamante, 2023; Martínez-Gallardo and Schleiter, 2015) to **patronage structures** (Panizza et al., 2019). Not all patronage appointments are clientelist, and they may have other objectives. For example, the appointment of technocrats and actors with relevant academic degrees at the higher levels of the executive is linked to the **need for technical expertise** (Dargent, 2015; Panizza et al., 2018).

Presidents tend to expect that, by appointing more technically skilled cabinets, they will achieve good public policy outcomes and **send favourable signals to the electorate**.

Data Collection

Cases and Data Gathering

I combined the Tesseract Optical Character Recognition (**OCR**; see Ooms, 2021) with different **semi-supervised machine learning models** to distinguish between resignation calls and other mentions of cabinet members in the press. This was applied to **46 years** of **Latin American Weekly Report (LAWR) archives**.

Detail of the Batches of LAWR Archives

Batch	Archives	Years	Format	Volume
Batch-01	LAWR-1975 to LAWR-1979 Including 1997	5	CSV UTF-8	9.56 MB
Batch-02	LAWR-1980 to LAWR-1998 Excluding 1997 Including the first half of 2003	18.5	PNG images	38.5 GB
Batch-03	LAWR-1999 to LAWR-2021 Excluding the first half of 2003	22.5	PDF files	341 MB

Binarisation Techniques for Enhancing OCR

Note. The images correspond to a LAWR page before binarisation and after the application of the techniques of Sauvola and Pietikäinen (2000), Singh et al. (2011) and Su et al. (2010).

Tesseract Optical Character Recognition

Latin American weekly report

WR-91-07 ISSN 0141-6235

21 February 1991, PP.201-01

How Domingo Cavallo rose to become Menem's virtual prime minister

Argentines are still hotly debating what lay behind the sudden resignation of economy minister Antonio Erman González and his replacement by Domingo Cavallo (WR-91-06). The simple explanation—the rapid, uncontrolled upsurge of the dollar rate—is dismissed as sufficient reason, and much has been published about all sorts of political plots.

One thing seems certain: that González had several times waved his resignation at Menem—and, according to sources with access to him, that he knew President Carlos Menem would one day accept it. Indeed, a widely accepted version is that González had persuaded his rival rapport Cavallo as his economy minister, to preside over the period of 'hiatus/action' which he expected would follow a first phase of 'stabilisation'. In this scenario, all González did was to choose his own timing.

Another strand of interpretation is that the change took place as Menem suddenly lost his confidence, shaken by a series of events he had not bargained with: the depth of adverse popular feeling towards his decision to pardon the military leaders of the 'dirty war' of the 1970s, the scandal over illegal arms-smuggling to Croatia and Ecuador, and the realisation that, despite his gestures, he could not count on unquestioning support from the Bush administration.

This, at a time when even such highly placed members of his government as Vice-President Eduardo Duhalde, were speculating that the manoeuvring to engineer Menem's departure from the presidency (for weeks speculation has been rife about which of the many constitutional succession procedures would find most favour).

It was at this point, the scenario goes, that Cavallo bolstered Menem's resolve to hang on. As a result, Cavallo has emerged not only as the new economy minister, but as a virtual prime minister—able to organise the share-out of key ministerial posts and even to appoint his own people in other ministries. Cavallo has replaced, even Senator Eduardo Menem, the President's brother, as Carlos Menem's most trusted adviser.

Many expect Cavallo to push for an agreement with the main opposition party, Raúl Alfonsín's Unión Cívica Radical (UCR), on the form of coalition that would ensure the continuity of the government. This is an option that many prominent politicians and businessmen, and even US diplomats, have been exploring since late 1990. ■

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Tab-Stop Lines — Column Layout — Segmented Blocks

Performance and Accuracy of the Tesseract OCR Algorithm

Accuracy is based on the proportion of text that was correctly identified.

This calculation was performed after extracting stop words and carried out with dictionaries trained with **Long Short-Term Memory (LSTM) models** used by Tesseract.

How do we distinguish between mentions and calls?

Labelling Process for Benchmarking Supervised Models

Coder	Labels	$M(T)$ Label	$\sum$ Time	Consensus
1	966	39s	10h 25m	94.05
2	718	1m 15s	15h 0m	94.84
3	704	38s	7h 29m	94.82
4	318	1m 4s	5h 38m	95.47
5	263	17s	1h 14m	99.26
6	101	1m 17s	2h 9m	88.50

Note. Each observation was hand-coded by three different coders. 2.3% of observations were revised and relabelled during an iteration step. Seed words coincide with features extracted from the benchmarking supervised models trained based on this labelling process.

Goodness-of-Prediction of the Semi-Supervised Models

Model	Knowledge-Based Seed Words				
	Accuracy	Precision	Recall	F1-score	ROC
Naïve Bayes	0.713	0.734	0.948	0.828	0.638
Kernel Linear SVM	0.698	0.741	0.900	0.812	0.614
Kernel Gaussian RBF SVM	0.726	0.728	0.995	0.840	0.647
Random Forest (100 trees)	0.743	0.742	0.991	0.849	0.671
Random Forest (500 trees)	0.743	0.740	0.997	0.849	0.682
XGBoost	0.726	0.762	0.905	0.827	0.660

Note. The evaluation was performed with resampling methods using the testing set and 10-fold cross-validation.

Goodness-of-Prediction of Semi-Supervised Models (1975-2021)

Following Greene et al. (2019), I trained semi-supervised models using a **five-year fixed rolling window** from 1975 to 2021 to train algorithms and predict resignation calls.

Random Forest classifiers with 500 trees 10-fold cross-validated.

Predicted Ministerial Resignation Calls over Cabinet Press Mentions

Proportion of predicted resignation calls over mentions of cabinet members in press reports, were carried out with an **ensemble semi-supervised RF500 algorithm**.

Augmented Artificial Intelligence (A2I)

I performed an augmented artificial intelligence process based on a **human review** of the predicted observations with low confidence values to improve the data's quality.

Convergent Validation against Similar Datasets

Note. Concurrent presidential terms were used for comparisons with the Presidential Cabinet Project (see Camerlo and Martínez-Gallardo, 2020).

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Kaplan-Meier Survival Estimations in 12 Presidential Cabinets

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Kaplan-Meier Survival Estimation

$F(t) = 1 - S(t) = Pr(T \leq t)$ can be used to obtain the incidence of ministerial exits during T by considering $S(t)$ as a survival function, if raw exit is considered an event in the **absence of competing risks**.

How do we identify specific crises from this noisy indicator?

Future Work: LLMs Classification

Perspective API using a laxer threshold, **GPT-4o**, and **Nous Hermes 2 Mixtral** outperform other LLM's zero-shot classification annotation for toxicity.

New avenues. More complex classifications (few-shot or chain-of-thought) and the use of synthetic data.

Cross-National Empirical Strategy

Ministerial Stability During Presidential Approval Crises

Check for updates

Original Article

Political Studies Association | BJPIR

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Ministerial stability during presidential approval crises: The moderating effect of ministers' attributes on dismissals in Brazil and Chile

Bastián González-Bustamante[1,2]

Abstract

This article analyses the effect of ministers' exposure to periods of low presidential approval in Brazil and Chile between 1990 and 2014. Approval is explored with quarterly estimates using a dyad-ratios algorithm and merged into a time-dependent cabinet data set to evaluate individual ministerial terminations (N=4245). The empirical strategy combines time-varying exposure Cox regressions with observational data and propensity score and matching to estimate the effect of low approval on ministerial survival and perform a moderation analysis with three profiles associated with presidential strategies: (1) nonpartisan ministers to limit agency loss and moral hazard; (2) economists as ministers to optimise cabinet performance and send positive signals to the electorate; and (3) party leaders as ministers to optimise legislative support. The main findings show that risk increases by 135.1% in periods of low approval. In addition, approximately only one in five nonpartisan ministers is removed compared to party members.

Keywords

Brazil, cabinets, Chile, ministerial turnover, presidential approval, propensity score, survival analysis

Introduction

In May 2010, just a month after the start of Sebastián Piñera's first presidential term, Jaime Mañalich, the recently appointed health minister, was summoned to testify about an allegedly falsified alcohol test performed 7 months earlier on Piñera's brother after a traffic accident. The test took place at a private clinic where Mañalich was then general manager and Piñera was a shareholder. Regardless of public pressure, Mañalich remained

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This paper's main question was: How can a minister's attributes prevent his exit from the cabinet during periods of low presidential approval?

Therefore, instead of a low approval period, **I shall focus on specific crises and only on technocrats.**

Nonpartisan Ministers, Technocrats and Party Leaders

I evaluated technical knowledge as a desirable trait in a presidential cabinet since it can help to manage difficult moments and promote the government agenda. I was specifically interested in the role played by economists, given the abundant literature on the influence of the technocratic phenomenon in Latin America (Centeno and Silva, 1998; Silva, 2009).

The argument is that a more technical cabinet allows presidents to obtain good results in implementing public policies and send signals to the electorate through which to maintain or regain their popularity.

- **Technocracy Hypothesis.** Ministers who are economists are less likely to be removed from the cabinet during periods of low presidential approval.

⋆ I also tested additional Hs related to approval, nonpartisan ministers and party leaders.

Time-Dependent Data Encoding

I generated a time event T considering each interval q_j and taking into account the individual ministerial terminations Y_i by constructing intervals where $Z(t) = I(t > Y_i)$.

Then, I merged in each interval $Z(t)$ quarterly smoothed presidential approval with (Carlin et al., 2019) data. In addition, I merged World Bank macroeconomic indicators (2020; see also Piburn, 2020) and the legislative ENP with the Gallagher and Mitchell (2005) indicator updated for the period between 1990 and 2014.

This procedure allowed me to obtain a set of **4,245 observations** to which we applied administrative censoring in the final interval when it coincided with the end of the corresponding presidential term.

Time-Varying Exposure Cox Regressions

For econometric estimation with observational data, I used an extension of Cox models with time as the dependent coefficient. This extension involved working with **non-proportional hazards** due to the data set's structure. The equation is similar to that for proportional hazards with a baseline hazard $\lambda_0(t)$ that incorporates the effect of the $Z(t)$ intervals of the multiple *i-th* observations, considering them as clusters.

First, I estimated a baseline model with the quarterly exposure variable to **low presidential approval** D_i (below 40 points).

Time-Varying Exposure Cox Regressions

Our baseline model does not include any covariates or specifications. We then extended the equation incorporating moderating covariates $X_{j[i]}$, controlling for government and country **fixed effects**, including a vector of controls C_k with *k-th* **potential confounders** (these are subsequently used to estimate propensity scores).

$$\lambda(t_i) = \lambda_0(t_i)\ exp\,[\beta_t Z_i(t) + \beta D_i + \sum_{j=1}^{J} \gamma_j X_{j[i]} + \zeta\, gov_i + \eta\, country_i + \sum_{k=1}^{K} \vartheta_k C_{k[i]} + \varepsilon_i] \tag{1}$$

Time-Varying Exposure Cox Regressions

Next, I incorporated the **interaction effect** between low presidential approval D_i and our covariates $X_{j[i]}$, denoting j-th type covariates that are incorporated in separate models with the term $\delta_j D_i \times X_{j[i]}$.

In practice, this empirical strategy involved testing three binary **moderating effects of ministers' profiles** and attributes: (i) nonpartisan ministers; (ii) **economists**; and (iii) political party leaders.

Time-Varying Exposure Cox Regressions

The vector C_k ($K = 9$) considers the following variables: **legislative ENP**, a binary variable reflecting when consecutive **presidential re-election** is allowed, **economic growth**, **inflation**, and five binary variables measuring the quadratic patterns of the **cyclical model of presidential approval** (initial honeymoon, a gradual deterioration and a slight recovery towards the end of the term, see Carlin et al., 2018; Stimson, 1976).

These nine covariates are considered **potential confounders for the PS estimation** as they could affect both presidential approval and the decision to fire ministers.

Nonparametric Representation of Causal Relationships

Propensity Score Analysis and Matching

To control for the non-random selection problem in the observational data, I next employed PS and matching with a **probit regression of periods of low presidential approval** D_i with the moderating covariates $X_{j[i]}$, government and country fixed effects and the potential confounders that make up the vector C_k.

$$D_i = \varphi[\alpha + \sum_{j=1}^{J} \gamma_j X_{j[i]} + \zeta\, gov_i + \eta\, country_i + \sum_{k=1}^{K} \vartheta_k C_{k[i]} + \varepsilon_i] \tag{2}$$

I then classified *i-th* observations into different PS balanced groups with the **nearest neighbour algorithm** without replacement to match observations with and without exposure to low approval D_i. I also used **full matching** to obtain samples with lower average PS across pairs (Austin and Stuart, 2015; Olmos and Govindasamy, 2015).

Effect of Low Approval on the Dismissal of Ministers

	Model I	Model II	Model III
Low Approval (< 40%)	0.668***	0.705***	0.855***
	(0.135)	(0.231)	(0.194)
Matching	Before	Before	Full
Sub. Clustering	No	No	Yes
Moderation Covariates	No	Yes	PS
Legislative ENP	No	Yes	PS/Yes
Re-Election Allowed	No	Yes	PS
GDP	No	Yes	PS
Inflation	No	Yes	PS/Yes
Quadratic Approval Pattern	No	Yes	PS
Government FE	No	Yes	PS
Country FE	No	Yes	PS
Obs. Clustering	No	Yes	PS
Log-Rank	23.333***	113.624***	22.037***
AIC	2,746.625	2,696.303	1,551.838
C-Index	0.573	0.672	0.578
VIF	1.001	1.084	3.470
Events	256	256	256
N	4,245	4,245	4,245
Log Likelihood	−1,372.313	−1,328.151	−772.919

* $p \leq 0.1$; ** $p \leq 0.05$; *** $p \leq 0.01$

By exponentiating β coefficients, I obtain the hazard ratio, finding that the matching allowed a bias correction of 16.2% compared to the unmatched model and 20.6% to the baseline: $e^{\beta} = 2.351$ ($p = 0.001$ and CI 95%: 1.395 to 3.962). This implies a 135.1% increase in the risk of individual ministerial terminations during periods of low approval.

I accept the Low Approval Hypothesis.

Moderation Analysis of Exposure to Low Approval

The only profile that offers protection during periods of low approval is that of **non-partisan ministers** (before and after matching).

Model IV corrects the bias of model I by 52%: $e^{\beta} = 0.222$ ($p = 0.018$ and CI 95%: 0.064 to 0.771).

	Time-Varying Cox Regressions			Survival Outcome Models		
	Model I	Model II	Model III	Model IV	Model V	Model VI
Low Approval	0.877***	0.736***	0.618**	1.381***	0.941***	0.672*
(< 40%)	(0.240)	(0.238)	(0.258)	(0.232)	(0.211)	(0.233)
Nonpartisan	−0.240			0.476		
	(0.215)			(0.261)		
Economist		−0.049			0.230	
		(0.207)			(0.301)	
Party Leader			0.241			−0.008
			(0.168)			(0.263)
Low Approval	−0.771**			−1.504**		
x Nonpartisan	(0.328)			(0.362)		
Low Approval		−0.192			−0.414	
x Economist		(0.336)			(0.400)	
Low Approval			0.186			0.503
x Party Leader			(0.272)			(0.339)
Matching	Before	Before	Before	Full	Full	Full
Sub. Clustering	No	No	No	Yes	Yes	Yes
Controls, confounders and FE section omitted due to space constraints						
Log-Rank	125.081***	98.428***	105.662***	48.957***	23.140***	29.086***
AIC	2,690.591	2,708.697	2,703.819	1,533.027	1,554.774	1,550.733
C-Index	0.683	0.663	0.668	0.657	0.607	0.622
VIF	1.081	1.082	1.078	3.482	3.498	3.474
Events	256	256	256	256	256	256
N	4,245	4,245	4,245	4,245	4,245	4,245
Log Likelihood	−1,326.295	−1,335.349	−1,332.910	−761.513	−772.387	−770.366

* $p \leq 0.1$; ** $p \leq 0.05$; *** $p \leq 0.01$

Future Work

Future Work

☑ I need to distil my **noisy indicator into some specific crisis indicators** by expanding human annotation and applying LLMs.

> My sense here is that **economic crises** and **policy failures** are not only easy to annotate using generative AI but also easier to validate and interesting for studying technocracy.

☑ I need to work with a **specific definition for technocrats** (i.e., economist, PhD degree).

> How about nonpartisanship?

> I also believe that some fuzzy definitions, such as technopols, are not entirely practical for cross-national comparison (this is, of course, open for debate).

Future Work

☑ A **cross-national econometric paper** would be helpful if we were to look into a **special issue**.

☑ In case, our balance of contributions fits better with an **edited book**, I could offer a chapter using process tracing in some **country cases** in order to:

- Test my econometric inferences drawn from the cross-national study on **typical cases** based on regressions residuals;
- Identify some **deviant cases to build new and alternative explanations** of causal mechanisms through in-depth case studies.

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Thank you very much!

Do you have any questions?

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